CLAIMS

What is claimed is:

1. A semiconductor laser system comprising:

a package including a floor and sidewalls, which extend from the floor;

a submount installed in the package;

a semiconductor chip installed on the submount;

ferrule in a feedthrough in one of the sidewalls of the package;

polarization-maintaining optical fiber that extends into the package via the ferrule, the optical fiber having an endface;

a mounting structure for securing the endface to the submount such that light is coupled between the semiconductor chip and the endface, the mounting structure being deformable to enable axial rotation of the optical fiber endface after the optical fiber attachment to the mounting structure.

2. A semiconductor laser system as claimed in claim 1, wherein the semiconductor chip generates light in the range of 1400 to 1500 nm.

3. A semiconductor laser system as claimed in claim 1, wherein the endface of the optical fiber is a double-angle wedge shape.

4. A semiconductor laser system as claimed in claim 1, wherein the optical fiber comprises a fiber grating that provides feedback to the semiconductor chip.

5. A semiconductor laser system as claimed in claim 1, wherein the optical fiber comprises a fiber grating that provides feedback to the semiconductor chip to thereby stabilize an operation of semiconductor chip in view of polarization anisotropy of the semiconductor chip.

6. A process for manufacturing a semiconductor laser system, the process comprising:

installing a semiconductor chip in a package;

inserting a polarization-maintaining optical fiber through a fiber feedthrough into the package;

securing an endface of the optical fiber to the package to receive light generated by the semiconductor chip;

after the step of securing the endface, detecting a polarization extinction ratio of light transmitted through the fiber from the semiconductor chip; and

axially rotating the endface of the fiber to improve the polarization extinction ratio.

7. A process as claimed in claim 6, further comprising aligning the endface to the semiconductor chip.

8. A process as claimed in claim 7, wherein the step of aligning the endface to the semiconductor chip comprises energizing the semiconductor chip and monitoring a magnitude of light coupled into the optical fiber.

9. A process as claimed in claim 8, wherein the endface is secured to the package prior to the aligning step, the aligning step comprising plastically deforming a mounting structure to which the optical fiber is secured.

10. A process as claimed in claim 8, wherein the endface is secured after the aligning step.

11. A process as claimed in claim 7, wherein the step of aligning the endface to the semiconductor chip comprises

energizing the semiconductor chip and monitoring a magnitude of light coupled into the optical fiber; and

positioning the endface relative to the semiconductor chip to maximize the magnitude of the light coupled into the optical fiber.

12. A process as claimed in claim 6, further comprising securing the fiber in a ferrule surrounding the fiber in the feedthrough.

13. A process as claimed in claim 6, wherein the step of detecting the polarization extinction ratio of light transmitted through the fiber comprises detecting a magnitude of light transmitted along a slow axis of the polarization-maintaining optical fiber and detecting a magnitude of light transmitted along a fast axis of the polarization-maintaining optical fiber, from the semiconductor chip.

14. A process as claimed in claim 6, wherein the step of axially rotating the endface of the fiber comprises plastically deforming a mounting structure that secures the optical fiber to the package.

15. A process as claimed in claim 6, wherein the step of axially rotating the endface of the fiber comprises:

deforming a mounting structure that secures the optical fiber to the package until a desired polarization extinction ratio is detected; and then

further deforming the mounting structure such that when released, the mounting structure will hold the fiber in an orientation corresponding to the desired polarization extinction ratio.

16. A process as claimed in claim 6, wherein the step of securing the endface of the optical fiber to the package comprising bonding the optical fiber to a mounting structure.

17. A process as claimed in claim 16, further comprising sealing around the fiber in the feedthrough.

18. A process as claimed in claim 17, wherein the step of sealing around the fiber is performed before the step of axially rotating the endface of the fiber to improve the polarization extinction ratio.

19. A process as claimed in claim 17, wherein the step of sealing around the fiber is performed after the step of axially rotating the endface of the fiber to improve the polarization extinction ratio.